**Electricity and Magnetism World Café - KEY**

1. PARALLEL CIRCUITS
   1. How many paths can electricity take in a parallel circuit?

more than one

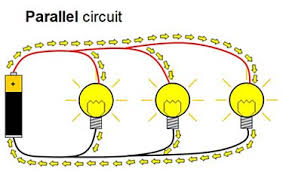
* 1. What would happen to the other bulbs if a bulb blew in this circuit?

they would stay lit

* 1. Where are parallel circuits most commonly used? Why?

if one lode goes off/out the other lodes will continue to work

* 1. What would happen to the overall power if you added an additional bulb to this circuit?

[](https://www.google.com/imgres?imgurl=http://www.cdn.sciencebuddies.org/Files/4889/7/parallel-circuit-diagram_img.jpg&imgrefurl=http://ffden-2.phys.uaf.edu/webproj/212_spring_2015/Kevin_Chang/Kevin_Chang/index.html&h=236&w=375&tbnid=Okh1dSsSBkNjbM:&docid=5qtVjBqFsywbjM&ei=C0qxVo_nIpGSjwPKh5mwBQ&tbm=isch&ved=0ahUKEwjPmNzAq9rKAhURyWMKHcpDBlYQMwg9KBkwGQ)It will not change

* 1. Sketch a diagram

1. SERIES CIRCUITS
   1. How many paths can electricity take in a series circuit?

one

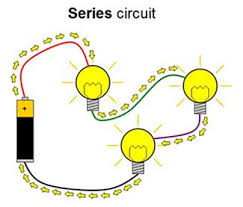
* 1. What would happen to the other bulbs if a bulb blew in this circuit?

they all would go out

* 1. Where are series circuits most commonly used? Why?

they are used in very few because they are not practical – a flashlight is an example

* 1. What would happen to the overall power if you added an additional bulb to this circuit?

[](https://www.google.com/imgres?imgurl=http://www.cdn.sciencebuddies.org/Files/4890/7/series-circuit-diagram-2_img.jpg&imgrefurl=http://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2&h=277&w=325&tbnid=mxlu7PsNacZmPM:&docid=ab2l-9qVw4XUVM&ei=iUmxVteNHoG4jwOtq7zIBA&tbm=isch&ved=0ahUKEwiX9tiCq9rKAhUB3GMKHa0VD0kQMwhBKBYwFg)the bulb would get dimmer

* 1. Sketch a diagram.

1. CONDUCTORS AND INSULATORS
   1. How do conductors affect electrical current?

They allow the flow of electrons

* 1. What are some examples of conductors?

Various metals such as copper, aluminum, gold, silver

Graphite

The human body

* 1. What are some ways conductors are used?

electrical wires in houses, extension cords, power lines

* 1. How do insulators affect electrical current?

They stop or slow the flow of elections

* 1. What are some examples of insulators?

 plastics, Styrofoam, paper, rubber, glass and dry air

* 1. What are some ways insulators are used?

They are used in electrical equipment to support and separate electrical conductors

1. CURRENT ELECTRICITY
   1. Define current electricity.

The flow of charged particles

* 1. How is current electricity produced?

Voltage caused current to flow through an electric circuit. You must have a voltage source in a circuit. A battery and a generator are two examples of a voltage souce.

* 1. What are the two types of current electricity?

Direct **current** (DC) and alternating **current** (AC).

* 1. Explain how both types work?

The electrons in direct **current** flow in one direction. The **current** produced by a battery is direct **current**. The electrons in alternating **current** flow in one direction, then in the opposite direction—over and over again.

1. MAGNETS
   1. What is a natural magnet?

Magnesia or Lodestone

* 1. Describe a magnet field.

The region of magnetic force around a magnet

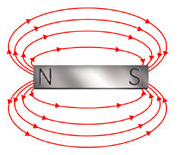
* 1. Explain the relationship between a magnetic field and electric current.

An electric current produces a magnetic field. Energy can be changed from one form into another. **When a current-carrying wire is placed in a magnetic field, electrical energy is converted into mechanical energy.** This happens because the magnetic field of the current makes the wire move

* 1. How can a magnet be demagnetized?

A permanent magnet can a become demagnetized. One way is to drop it or strike it hard. If a magnet is hit hard, its domains can be knocked out of alignment. Heating a magnet will also destroy its magnetism. When an object is heated, its particles vibrate faster and more randomly. This makes it more difficult for all the domains to stay lined up. In fact, above a certain temperature a material loses the property of ferromagnetism. The temperature depends on the material.

* 1. Sketch a diagram of a magnetic field.



1. ELECTROMAGNETS
   1. What are the essential components of an electromagnet?

Wire wrapped around a magnet

* 1. How does an electromagnet work? (discuss magnetic fields and electrical currents)

Current is used to create magnetic field

* 1. How do you increase the strength of an electromagnet?

Increase the number of times the wire is wrapped around the magnet (coils)

* 1. How can we use electromagnets to complete tasks? What makes the useful?

motors, speakers, doorbells, medical equipment, magnets to lift heavy equipment

* 1. Sketch a diagram of an electromagnet.



1. MOTORS
   1. Electric motors convert what type of energy into what type of energy?

Electrical into mechanical energy

* 1. Name a household appliance that has a motor in it.

game consoles   
fans   
window units   
blender   
food processer   
mixer   
refrigerator   
oven hood   
coffee grinder   
electric toothbrush   
remote control cars   
drill   
saws   
air compressor   
hair dryer   
Washing machine   
dryer   
Cell phone, vibrates from a motor

* 1. How does a motor work?

Electric motors use electrical energy to produce motion (mechanical energy)

* 1. What is the mechanical advantage of a motor?

The motor decreases the amount of force needed and increases the amount of work done.

1. GENERATORS
   1. A generator converts mechanical energy into what type of energy?

electrical

* 1. What is the difference between an AC and a DC generator?

One produces AC current and one produces DC current

* 1. What are generators used for?

 a device that converts mechanical energy to electrical energy for use in an external circuit

* 1. Where does most of the electrical energy we use come from?

Electric companies use generators to produce electricity. The generators use turbines propelled by water, wind and steam from the burning of fuel to create mechanical energy which in converted into electricity

1. DIODES AND TRANSISTORS
   1. What does a diode control the flow of?

Direction of a current flow

* 1. What does a transistor do?

amplify electrical signals

* 1. Diodes and transistors are considered what type of device?

semiconductors